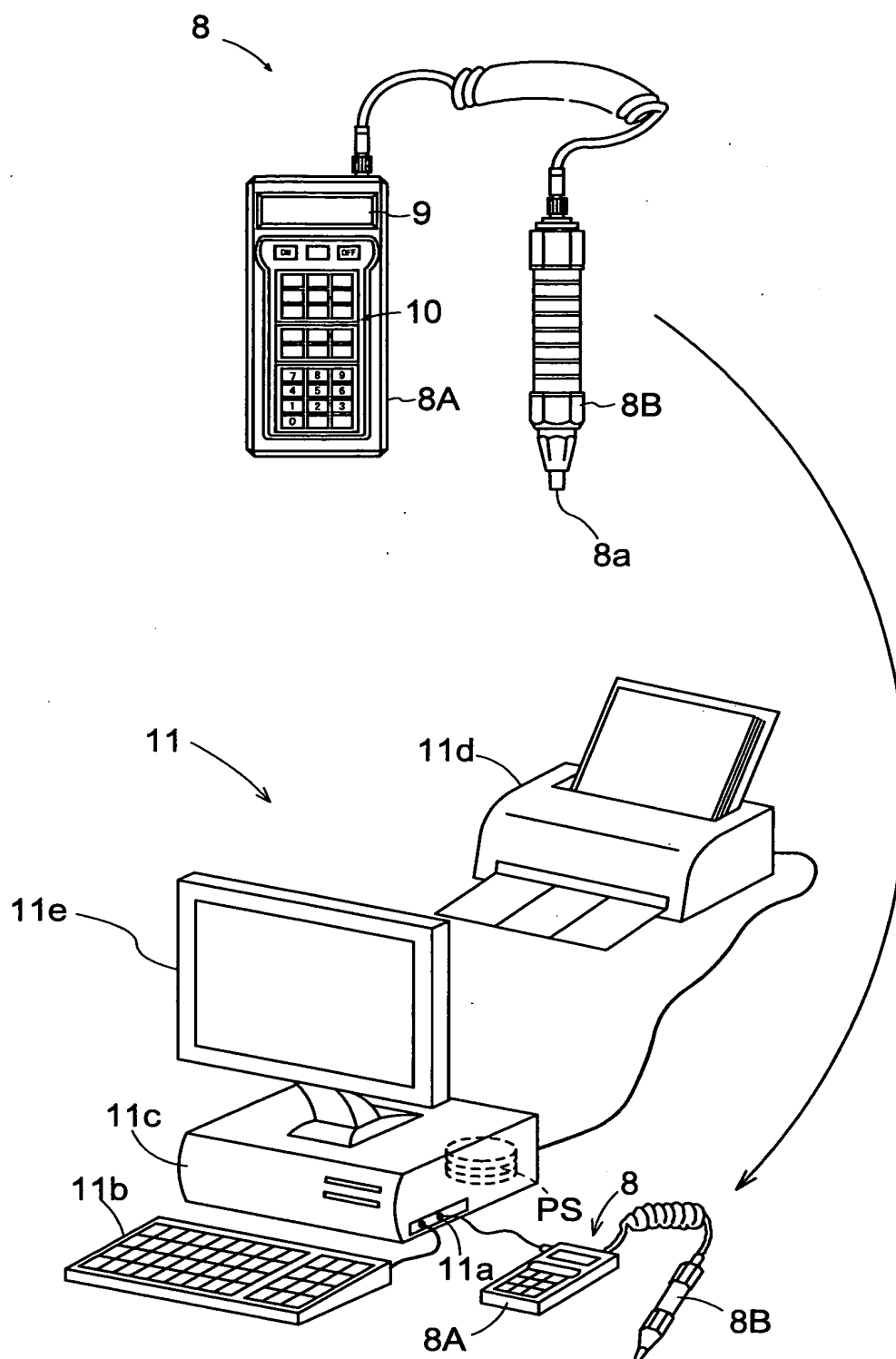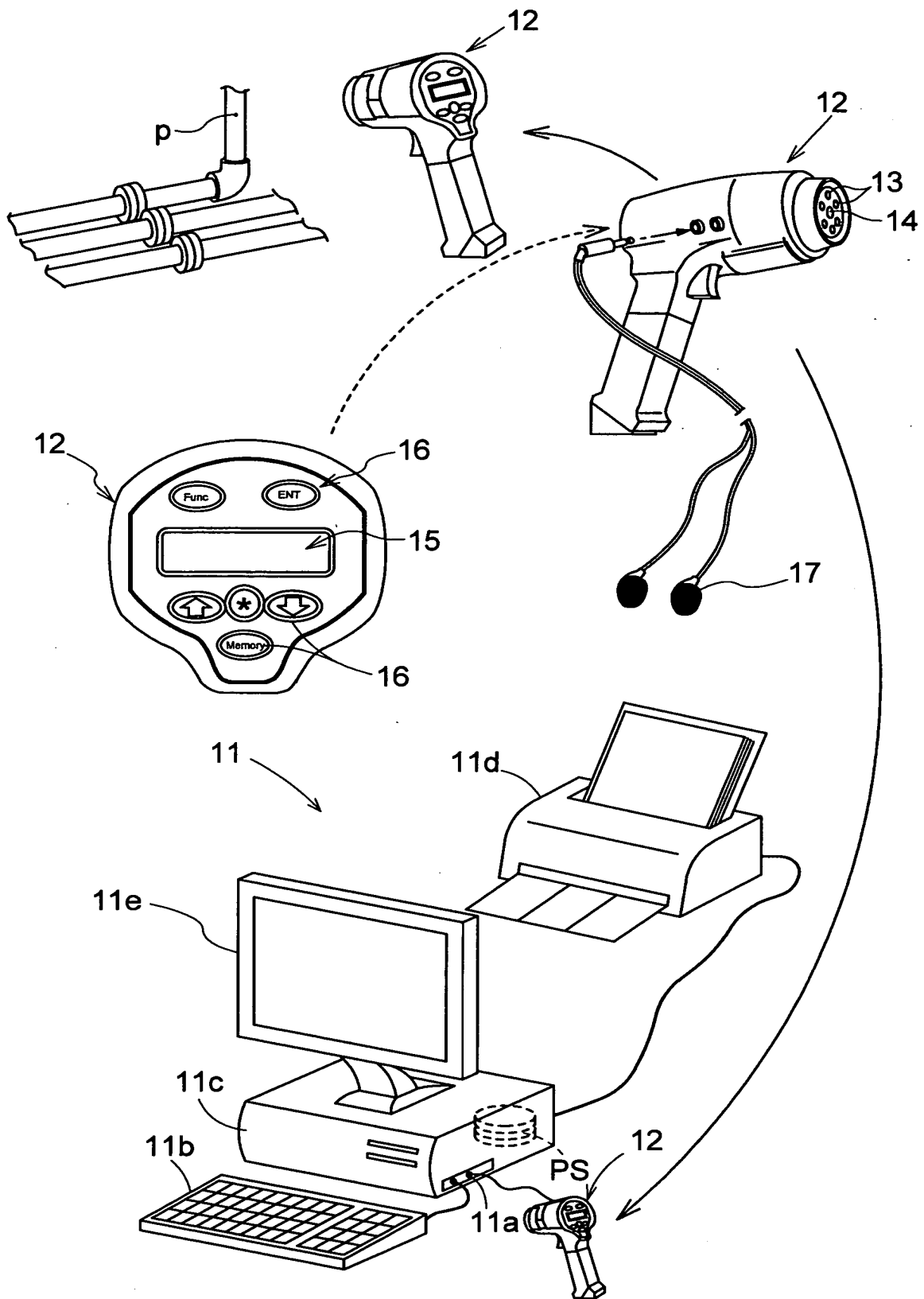【Fig.1】

【Fig.2】

【Fig.3】

【Fig.4】

【Fig.5】

―11c

(calculating means S2)
calculating operation

number of all representative steam traps Ta
number of defective traps Tx $\longrightarrow$ trap defect ratio Kt

trap-passed steam loss sub total Σ qt(trap defect)
and
its monetary converted value MΣqt

numbers for respective usages and respective types Ta1,Ta2 · · ·
classified values for respective usages and respective types MΣqt1,MΣqt2 · · ·
defect ratio Kt1,Kt2 · · ·

simulation number ratio α
deduced value of total trap-passed steam loss amount Qt(trap defect)
and
its monetary converted value MQt

trap-passed steam loss sub total $\Sigma\Delta$qt'(trap type)
deduced value of total trap-passed steam loss amount MQt'(trap type)
and
its monetary converted value MQt'

sum total trap-passed steam loss amount Qt"=(Qt+Qt')
and
its monetary converted value MQt"

number of leaking points Ns,Np,Nn
valve defect ratio Kv

fluid leakage loss sub total for each fluid type Σqs, Σqp, Σqn
and
its monetary converted value MΣqs,MΣqp,MΣqn

installed valve number ratio value V/Va,pining amount ratio value X/Xa,Y/Ya,
deduced value of total fluid leakage loss amount Qs,Qp,Qn for each type
and its monetary converted value MQs,MQp,MQn

total unknown steam amount Qx(=Qi-Qo),
and its monetary converted value MQx
unknown steam ratio Kx
sum total steam loss amount Qts(Qt"+Qs),
and its monetary converted value MQts
improvable unknown steam ratio Kts
basis unknown steam amount Qxx(=Qx-Qts)
improved unknown steam ratio Kxx

【Fig.6】

report

date of diagnoses
day / month / year

【Fig.7】

steam input/output

total receiving steam amount $Qi=qi1+qi2+qi3$
total necessary steam amount $Qo=qo1+qo2+qo3+qo4$
total unknown steam amount $Qx=qx1+qx2+qx3+qx4=(Qi-Qo)$

unknown steam qx4   qo4

qm3

unknown steam qx3

unknown steam qx2   qo3

qm2

unknown steam qx1   qo2   qi3

qm1   qi2

qo1

qi1

total rceiving supply amount Qi

【Fig.8】

details of unknown steam

unknown steam ratio Kx
total unknown steam amount Qx
monetary value MQx (yen)

basic conditions
total receiving steam amout Qi

effect of steam loss reduction

sum total steam loss amount Qts
monetary value MQts
improvable unknown steam ratio Kts

improved unknown steam ratio Kxx

【Fig.9】

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results of trap operation diagnosis and fluid leakage diagnosis

①trap operation diagnosis
trap defect ratio Kt
loss amount 〔monetary value $M\Sigma qt$ of trap-passed steam loss
sub total Σqt(trap defect)〕
number diagnosed Ta

    ＜for respective usages＞
      Ta1　Kt1　$M\Sigma qt1$
      Ta2　Kt2　$M\Sigma qt2$
    ＜for respective types＞
      Ta3　Kt3　$M\Sigma qt3$
      Ta4　Kt4　$M\Sigma qt4$
       :
(simulation number ratio α)

〔loss amount〕
  total number of steam traps T
  monetary value of total trap -passed
  steam loss amount Qt(trap defect):MQt
  monetary value of total trap -passed
  steam loss amount Qt'(trap defect):MQt'
sum total
  monetary value of sum total-trappassed
  steam loss amount Qt":MQt"

②steam piping leakage diagnosis(number of valves Va)
valve defect ratio Kt(number of leaking portions Ns)
loss amount 〔monetary value of steam leakage loss sub total $\Sigma qs:M\Sigma qs$〕

〔loss amount〕
  total number of valves V
  monetary value of total steam leakage loss amount Qs:MQs

③non-steam piping leakage diagnosis
  ＜commmpressed air＞
    number of leaking portions Np、
    leakage loss sub total Σqp、
    monetary value $M\Sigma qp$
  ＜nitrogen gas＞
    number of leaking portions Nn、
    leakage loss sub total Σqn、
    monetary value $M\Sigma qn$

＜commmpressed air＞
monetary value of total leakage
loss amountQp:MQp

＜nitrogen gas＞
monetary value of total leakage
loss amountQn:MQn

【Fig.10】

result of system improvement diagnosis
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①   system improvement proposal 1

monetary value of effect   Ma1

cost Ha1

②   system improvement proposal 2

·   monetary value of effect Ma2

·   cost Ha2

·

result of maintenance improvement diagnosis
---

①   method improvement proposal 1

monetary value of effect   Mb1

cost Hb1

②   method improvement proposal 2

·   monetary value of effect Mb2

·   cost Hb2

·

【Fig.11】

conclusion of diagnoses

〔steam〕
   effect:
     monetary value MQts of sum total   steam loss amount Qts
   cost:Hts

〔non-steam fluids〕
   ＜compressed air＞
   effect:
    monetary value MQp of total leakage loss amount Qp for compressed air
   cost:Hp

   ＜nitrogen gas＞
   effect:
monetary value MQn of total fluid leakage loss amount Qn for nitrogen gas
   cost:Hn

〔system〕
   effect:
     monetary value Σ Ma
   cost: Σ Ha

〔maintenance〕
   effect:
     monetary value Σ Mb
   cost: Σ Hb

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【Fig.12】

inputting means S1

11a,11b

trap diagnotor — result of diagnosis
(number ratio information RV)
leakage diagnotor — result of diagnosis
(evaluation amount ratio information RV)
total receiving steam amount Qi,
total necessary steam amount Qo
(or total unknown steam amount Qx)

(calculating means S2)
calculating operations

total unknown steam amount $Qx(=Qi \cdot Qo)$
sum total steam loss amount Qts
→ total improvable steam loss amount
total basis unknown steam amount $Qxx(=Qx \cdot Qts)$
improvable unknown steam ratio Kts — $Qts:Qx$

or

unknown steam ratio Kx — $Qx:Qi$
improved unknown steam ratio Kxx — $Qxx:(Qi \cdot Qts)$

or

unknown steam ratio Kx — $Qx:Qi$
appaarent improved unknown steam ratio Kxx' — $Qxx \cdot Qi$

11c

(deta generting means S3)
generating operation of comparhensive evaluation data D

evaluation data $D(Qx,Kts\cdots)$
or
evaluation data $D(Qts,Kts\cdots)$
or
evaluation data $D(Kx,Kxx\cdots)$
or
evaluation data $D(Kx,Kxx'\cdots)$

11c

11d,11e

outputting means S4

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【Fig.13】

inputting means S1 (11a,11b)

trap diagnotor — result of diagnosis

(number ratio information RT)

total receiving steam amount Qi,
total necessary steam amount Qo
(or total unknown steam amount Qx)

(calculating means S2) calculating operations

total unknown steam amount $Qx (= Qi \cdot Qo)$
total trap-passed steam loss amount Qt'' (or Qt) → total improvable steam loss amount

total basis unknown steam amount $Qxx (= Qx - Qt''$ (or Qt))

improvable unknown steam ratio Kts → Qt'' (or Qt) : Qx

or

unknown steam ratio Kx → $Qx \cdot Qi$
improved unknown steam ratio Kxx → $Qxx : (Qi - Qt''$ (or Qt))

or

unknown steam ratio Kx → $Qx \cdot Qi$
appaarent improved unknown steam ratio Kxx' → $Qxx' : Qi$

(deta generting means S3) generating operation of comparhensive evaluation data D   (11c)

evaluation data $D(Qx, Kts \cdots)$

or

evaluation data $D(Qt''$ (or Qt), $Kts \cdots)$

or

evaluation data $D(Kx, Kxx \cdots)$

or

evaluation data $D(Kx, Kxx' \cdots)$

11c

outputting means S4   11d,11e